Paravertebral Arteriovenous Malformation Supplied by Branches of the Iliac Arteries

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Summary

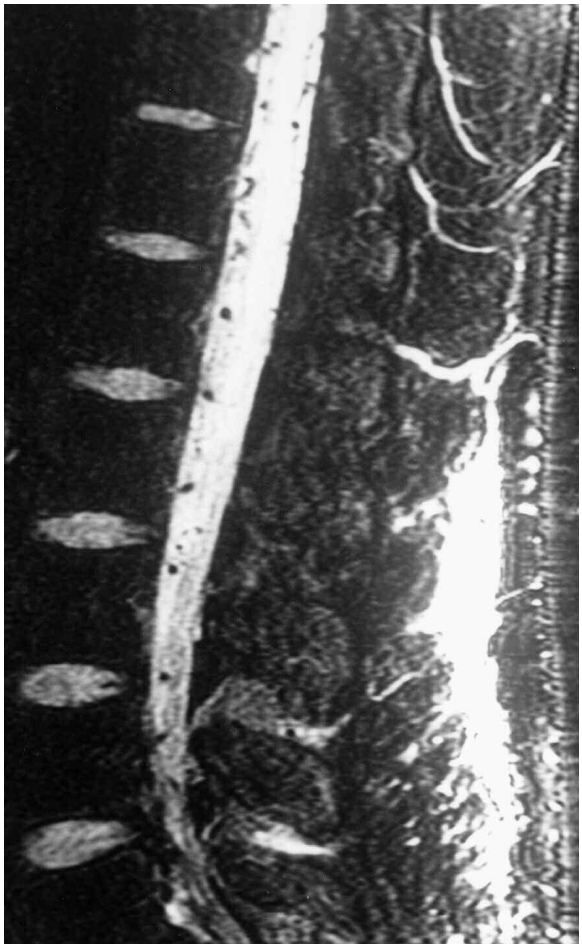
Arteriovenous malformations of the spine and spinal cord can be classified into spinal cord arteriovenous malformations (AVMs) and fistulas (AVFs) and dural AVM and AVF occurring outside the dura but draining into the epidural veins called paravertebral AVM and AVF[1]. Paravertebral malformations are rare arteriovenous communications outside the dura but draining into the epidural veins. These malformations produce symptoms from either venous congestion of the cord or cord compression from dilated epidural veins resulting in a myelopathy. We present a case of a patient with a lumbar paravertebral malformation treated successfully by endovascular occlusion of the feeders.

Case Report

A 37 year old man present with a 6 month history of progressive lower limb weakness and occasional impotence and urinary incontinence. On examination he was found to be clinically well but with definite bilateral lower limb weakness and decreased knee and ankle reflexes. There was diminished anal tone on rectal examination. MR examination demonstrated multiple intraspinal signal voids from dilated epidural veins and extensive spinal cord hyperintensity on the T2 weighted sequence (figure 1A). These features strongly suggested a possible spinal cord fistula or vascular malformation. Initial spinal angiography failed to detect an abnormality. However repeat angiography including the internal iliac arteries demonstrated a markedly dilated right superior gluteal artery feeding a fistula in the greater sciatic notch (figure 1B and C). There was drainage via the epidural venous plexus. A communication between the epidural venous plexus and a radiculomedullary vein could not be demonstrated although this clearly existed. The dilated feeding artery was occluded with a Gold detachable valve balloon and cyanoacrylate glue with complete occlusion of the fistula and the vessel (figure 1D). The patient symptoms starting to remove almost immediately and he has regained some power in his legs 3 months later.

Discussion

Paravertebral malformations involving the lumbar spine are rare lesions, usually congenital in origin although traumatic lesions have been reported [2]. Goyal et Al reported 10 patients of which 2 had lumbosacral malformations [1]. Patients usually present with a progressive myelopathy although occasionally the malformations are incidentally discovered. The myelopathy is due either to cord and conus



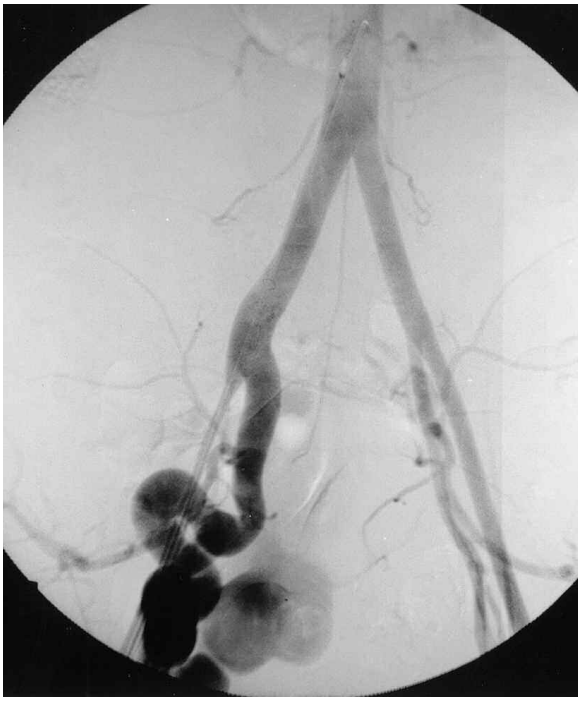
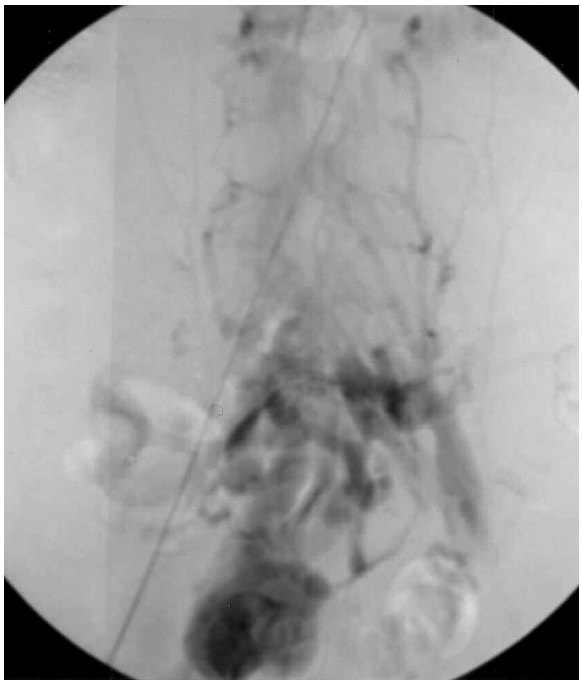
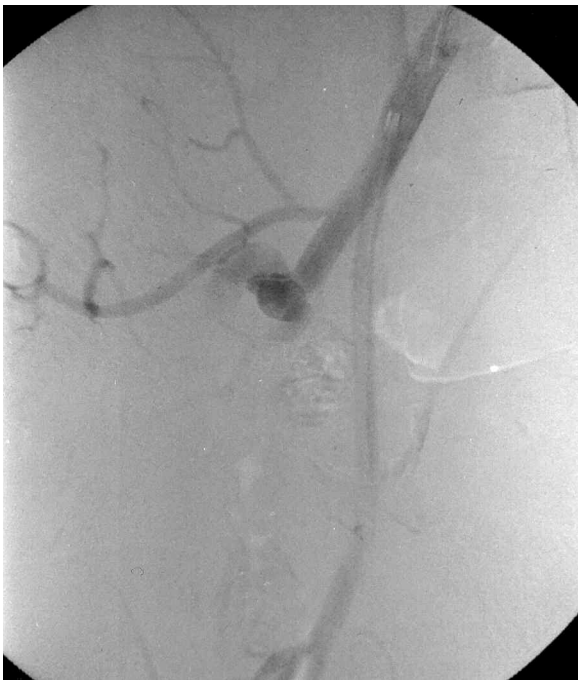


Figure 1 A) T2 weighted sagittal image of the lumbosacral spine demonstrates dilated epidural veins. B) Pelvic angiogram demonstrates hypertrophied right inferior gluteal artery with aneurysm formation. C) Distal sacral fistula demonstrated with extensive draining epidural veins. D) post embolization occlusion of the right inferior gluteal artery with occlusion of the fistula.





compression from the dilated epidural veins or from venous congestion of the cord. MR findings demonstrate dilated epidural veins with an increased signal within the conus and cord on the T2 weighted scan from the venous ischaemia [1]. The arterial feeder in our case was from the inferior gluteal artery, however any paraspinal artery may feed the malformation. Vertebral, thyrocervical, costocervical, intercostal, lumbar, branches of the internal iliac and lateral sacral arteries have been recorded as feeders in the literature [1,2,3]. In this case we could not demonstrate perimedullary reflux although it probably existed.

This case demonstrates the importance of performing complete spinal angiography including the pelvic arteries when searching for spinal and paravertebral arteriovenous fistulas. We recommend that a pelvic flush angiogram in addition to a selective internal iliac angiogram always be performed. The first spinal angiogram failed to detect the malformation as the possibility of a pelvic vascular malformation was not initially considered. A similar experience was reported by Larsen et al where 12.5% of their cases of spinal dural fistulas had internal iliac artery supply [4]. Willinsky et Al [5] makes an important point that if the venous phase of the spinal circulation is normal this excludes a spinal dural arteriovenous fistula, if there is venous stasis as demonstrated in both our patients on angiography, this is consistent with a dural arteriovenous fistula.

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